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judge from analogy, we might expect the Tortugas representative of the genus to be identical with the eastern Atlantic and Mediterranean species. But Dr. Mayer has studied both in life, and the differences between them, particularly the presence of lateral tentacular filaments in *ochracea*, are too important to be considered individual variations.

The section dealing with the Lobatæ deserves special notice because of the excellent accounts of *Bolinopsis vitrea* *Mnemiopsis mc-cradyi*, *M. gardeni* and *Ocyropsis crystallina*, the earlier descriptions of which were unsatisfactory. These two species of *Mnemiopsis* are closely allied to the well-known *M. leidyi*, but the differences are constant, though slight. Unfortunately, the status of the other West Indian *Ocyropsis*, *O. maculata* Rang, is still doubtful, as Dr. Mayer never saw a specimen, and the same is true of *Lesueria hyboptera* A. Agassiz, which he suspects is "only a *Bolina infundibulum* with its oral lobes torn off, and the edges healed over."

Under the Beröidæ Dr. Mayer recognizes only one genus, *Beroe*, believing that *Pandora* is a young stage. On this he differs from Moser, and from the writer. Probably the last word on this point is yet to be spoken. Two species of *Beroe* are listed from our coast, *cucumis* and *ovata*, the latter including *clarkii* and *shakspeari*, and, I believe, correctly. The figure of the adult *ovata* is welcome, because many of the records of this species in the past have rested on insufficient evidence. *B. forskalii* is not included, as it has never been taken in American waters. But judging from its wide distribution in warm regions, it may be expected on our southern coast. Finally there is a brief account of the remarkable Greenland Platyctenid *Tgalfiella tristoma*, condensed from Mörtsen's preliminary description. His final paper has appeared in Vol. 5 of the Danish Ingolf Expedition.

Students will find in this book a convenient manual for a group, the previous literature of which is scattered and largely inaccessible.

HENRY B. BIGELOW

Evolution in the Past. By HENRY R. KNIPE, F.L.S., with Illustrations by Miss ALICE B. WOODWARD and ERNEST BUCKNALL. London, Herbert & Daniel. 1912. Pp. xvi + 242, 4 text figures and 56 plates. 4to.

A few years ago the author published a profusely illustrated work entitled "From Nebula to Man" in which in metrical form he gave a sketch of the gradual development of our earth from a nebular mass and of the evolution of living forms upon the globe. The difficulty of forcing the jaw-torturing nomenclature of the paleontologist and zoologist to adapt itself to the requirements of smoothly running blank verse revealed itself in the author's epic, and it is with a certain sense of relief that we turn from the earlier work to the present, in which in plain prose he brings together and outlines the gradual unfolding through successive geologic periods of the story of evolution.

The author has evidently read widely and familiarized himself with the latest results of scientific research in the domain of paleontology. His statements as to the different geologic periods and the forms of life which characterized them are in accord with the most advanced teaching of the present. The style of the book is popular, so far as it is possible to make any subject popular which deals with words of Greek origin, which are only in current use among specialists and students. The paleontologist, who is forced to frame names for newly discovered forms of animal life which existed in a past more or less remote, is at a disadvantage when writing of these things when compared with the man who has to deal with recent forms of life, which are known all over the globe by vernacular names. A man who writes about elephants, tigers, bears, and wolves, who discourses of thrushes and nightingales, who speaks of crocodiles and sharks, or bugs and snails, is comprehended even by children; but the man who writes about trilobites, ichthyosaurs, diplodocuses, dædicurus and pliopithecus is apt to be regarded with breathless amazement by the uninitiated. An amusing illustration of this occurred recently when the

present reviewer, standing in the museum of which he is the director, was engaged in a lively conversation with Col. Roosevelt about the evolution of mammalian life in North America. A score of newspaper reporters surrounded the speakers, and one of them subsequently published an account in which he said that a most astonishing conversation in language absolutely unintelligible to the listeners took place between the ex-president and the director of the museum.

The publication of such works as that which has appeared from the pen of Mr. Knipe will tend in the future to make the subject more intelligible to the ordinary reader and the association of the names of things with splendid illustrations of them must familiarize the public with the whole subject.

Too much praise can not be bestowed upon the fine plates which adorn the volume. They are the product of the facile pencil of Miss Alice B. Woodward, the talented daughter of Dr. Henry Woodward, the late curator of geology and paleontology in the British Museum, and Mr. Ernest Bucknall. A few of these originally appeared in the author's first volume, but the great majority are new.

W. J. HOLLAND

NOTES ON METEOROLOGY AND CLIMATOLOGY

A RAINLESS APRIL IN ENGLAND

APRIL last was the driest month on record over a large part of England. In London but 0.04 inch of rain fell, making this month the driest of that name in about a century and a half, which is the length of the record. In the last half-century only one month, February, 1891, had less precipitation. At another station, Bromley, where a record has been kept since 1869, April, 1912, was the first month in which *no* precipitation was recorded.

THE RECORDING OF EARTHQUAKES

It is particularly unfortunate that congress did not see fit to make an appropriation for the inauguration of seismological work under

the auspices of the U. S. Weather Bureau. Two seismographs have been in operation at the central office in Washington for a number of years, but no work of this character has been done at any of the other stations, notwithstanding the general call from a number of sources that the weather bureau engage in this important work. While not strictly meteorological in character this work is carried on by the weather services of most countries, principally because in each country it is the one government scientific bureau having permanent stations at scattered points, with a trained body of observers to conduct the work. In the United States good work has been done by various educational institutions, particularly those of the Jesuit order. However, it has been the experience of other countries that seismological observations can be obtained to greatest advantage by a government bureau through the use of standard instruments, permanently established and having similar environments. In the United States the weather bureau seems best equipped for such work.

THE ATMOSPHERE AT GREAT HEIGHTS

LUMINOUS phenomena like meteor trains and auroras at heights of 200 kilometers (124 miles) or more have long proved the existence of some atmosphere, however tenuous, even at these great heights. According to Professor W. J. Humphreys, the atmosphere at a height of 150 kilometers (93 miles) consists of 99.73 per cent. (by volume) of hydrogen and 0.27 per cent. of helium, with a total pressure of 0.0043 in millimeters of mercury. As a result of recent investigations, Dr. A. Wegener concludes¹ that there is an atmosphere of perceptible density even up to 500 kilometers (311 miles) and that in the highest strata there must be an unknown gas in addition to and lighter than hydrogen. He suggests that this gas be called "geocoronium" because of its similarity to "coronium" which is supposed to exist in the atmosphere of the sun.

¹ *Himmel und Erde*, July, 1912.